

TEST BANK



Done by: Volunteer

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Pathology test bank

A 42-year-old man has had polyuria and polydipsia for the past 4 months. His medical history shows that he fell off a ladder and hit his head just before the onset of these problems. On physical examination, there are no specific findings. Laboratory findings include serum Na⁺, 155 mmol/L; K⁺, 3.9 mmol/L; Cl⁻, 111 mmol/L; CO₂, 27 mmol/L; glucose, 84 mg/dL; creatinine, 1 mg/dL; and osmolality, 350 mOsm/mL. The urine specific gravity is 1.002. This patient is most likely to have a deficiency of which of the following hormones?

- A Corticotropin
- B Melatonin
- C Oxytocin
- D Prolactin
- E Vasopressin

E

Blood relatives of individuals diagnosed with type 1 or type 2 diabetes mellitus are studied for 10 years. Laboratory testing for glucose and insulin levels and autoantibody formation is performed on a periodic basis. The HLA types of the subjects are determined. A cohort of the subjects who are 8 to 22 years old has no overt clinical illnesses and no hyperglycemia; however, autoantibodies to glutamic acid decarboxylase are present. Many subjects in this cohort have the HLA-DR3 and HLA-DR4 alleles. Which of the following pancreatic abnormalities is most likely to be found in this cohort of study subjects?

- A Acinar acute inflammation and necrosis
- B Acinar fibrosis and fatty replacement
- C Islet amyloid deposition
- D Islet hyperplasia
- E Insulinitis
- F Normal islets in a fibrous stroma

E

A 13-year-old girl collapses while playing basketball. On arrival at the emergency department, she is obtunded. On physical examination, she is hypotensive and tachycardic with deep, rapid, labored respirations. Laboratory studies show serum Na⁺, 151 mmol/L; K⁺, 4.6 mmol/L; Cl⁻, 98 mmol/L; CO₂, 7 mmol/L; and glucose, 521 mg/dL. Urinalysis shows 4+ glucosuria and 4+ ketonuria levels, but no protein, blood, or nitrite. Which pathologic abnormality is most likely to be present in her pancreas at the time of her collapse?

- A Loss of islet beta cells
- B Acute inflammation of islets
- C Amyloid replacement of islet beta cells
- D Chronic inflammation of islets
- E Hyperplasia of alpha cells
- F Pancreatic neuroendocrine tumor

A

An infant is born following premature delivery. Multi-ple external congenital anomalies are noted. The infant exhibits a seizure soon after birth. The blood glucose is 19 mg/dL. Which of the following maternal diseases is the most likely cause for the observed findings in this infant?

- A Cystic fibrosis
- B Diabetes mellitus, type 2
- C Gestational diabetes
- D Maturity onset diabetes of the young
- E Pancreatic neuroendocrine tumor

B

A clinical study is conducted in patients diagnosed with either type 1 or type 2 diabetes mellitus. Persons with either type develop complications of accelerated and advanced atherosclerosis. All untreated patients have an elevated hemoglobin A1c. Which of the following features common to patients with either type 1 or type 2 diabetes mellitus is most likely to be found by this study?

- A Association with certain MHC class II alleles
- B High concordance rate in monozygotic twins
- C Marked resistance to the action of insulin
- D Nonenzymatic glycosylation of proteins
- E Presence of islet cell antibodies

D

A 50-year-old man with fasting blood glucose >140 mg/dL on two occasions is put on a restricted caloric diet and started on a glucagon-like peptide-1 (GLP-1) receptor agonist. Which of the following laboratory studies is most likely to afford the best method of monitoring disease control in this man?

- A Cholesterol, total
- B Fasting plasma glucose
- C Glycosylated hemoglobin
- D Microalbuminuria
- E Random plasma glucose
- F Serum fructosamine

C

A 50-year-old man has had a nonhealing ulcer on the bottom of his foot for 2 months. On examination, the 2-cm ulcer overlies the right first metatarsal head. There is reduced sensation to pinprick in his feet. His visual acuity is reduced bilaterally. Laboratory studies show serum creatinine is 2.9 mg/dL. Which of the following laboratory test findings is he most likely to have?

- A Glucosuria
- B Hypoalbuminemia
- C Hypokalemia
- D Leukopenia
- E Steatorrhea
- F Uricosuria

A

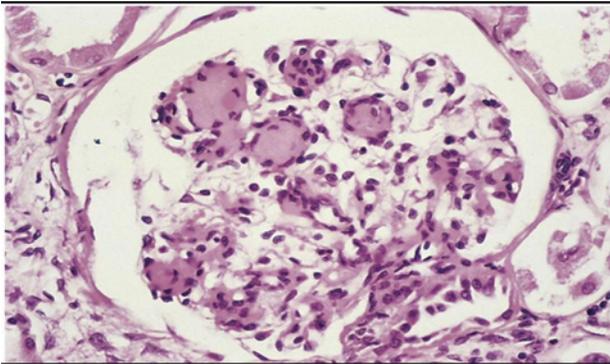
A 52-year-old man has been concerned about a gradual weight gain over the past 30 years. He is 174 cm (5 feet 7 inches) tall and weighs 91 kg (body mass index 30). He is taking no medications. On physical examination, he has decreased sensation to pinprick and light touch over the lower extremities. Patellar reflexes are reduced. Motor strength seems to be normal in all extremities. Laboratory studies show blood glucose of 169 mg/dL, creatinine of 1.9 mg/dL, total cholesterol of 220 mg/dL, HDL cholesterol of 27 mg/dL, and triglycerides of 261 mg/dL. A chest radiograph shows mild cardiomegaly. Five years later, he has claudication in the lower extremities when he exercises. Based on these findings, which of the following complications is most likely to occur in this man?

- A Gangrene
- B Hypoglycemic coma
- C Ketoacidosis

- D Mucormycosis
- E Pancreatitis
- F Systemic amyloidosis

A

A 45-year-old woman has had angina pectoris, polyuria, and polydipsia for the past 5 years. On physical examination, she has a body mass index of 32. Laboratory studies show her hemoglobin A1c is 10%. Urinalysis shows proteinuria, but no ketonuria. The representative microscopic appearance of her kidneys is shown in the figure. Which of the following is the most likely mechanism leading to the disease causing her findings?



- A Chronic pancreatitis
- B Glucokinase gene mutation
- C Insulin resistance
- D Systemic amyloidosis
- E T-cell mediated B-cell destruction

C

74-year-old woman is admitted to the hospital in an obtunded condition. Her temperature is 37° C, pulse is 95/min, respirations are 22/min, and blood pressure is 90/60 mm Hg. She appears dehydrated and has poor skin turgor. Her se-rum glucose level is 872 mg/dL. Urinalysis shows 4+ glucos-uria, but no ketones, protein, or blood. Which of the following factors is most important in the pathogenesis of this patient's condition?

- A Autoimmune insulinitis
- B Glucokinase gene mutation
- C HLA-DR3/HLA-DR4 genotype
- D Peripheral insulin resistance
- E Virus-induced injury to beta cells in islets

D

A 28-year-old, otherwise healthy man has had head-aches for the past 2 weeks. Physical examination yields no remarkable findings except for a blood pressure of 174/116 mm Hg. An abdominal CT scan shows an enlarged right ad-renal gland. A right adrenalectomy is done; the figure shows the gross appearance of the specimen. Which of the following laboratory findings in his blood was most likely reported in this patient before surgery?

- A Hyperglycemia
- B Hyperkalemia
- C Hyponatremia
- D Low corticotropin level
- E Low insulin level
- F Low renin level

F

A 5-year-boy has developed features that suggest puber-ty over the past 6 months. On physical examination, the boy has secondary sex characteristics, including pubic hair and en-largement of the penis. Which of the following morphologic features is most likely to be seen in his adrenal glands?

- A Cortical atrophy
- B Cortical hyperplasia
- C Cortical nodule
- D Medullary atrophy
- E Medullary hyperplasia
- F Medullary nodule

B

A 19-year-old, previously healthy woman collapsed after complaining of a mild sore throat the previous day. On examination she is hypotensive and febrile with purpuric skin lesions. Her peripheral blood smear shows schistocytes. Imaging studies show her adrenal glands are enlarged, and there are extensive bilateral cortical hemorrhages. Infection with which of the following organisms best accounts for these findings?

- A Cytomegalovirus
- B Histoplasma capsulatum
- C Mycobacterium tuberculosis
- D Neisseria meningitidis

E Streptococcus pneumoniae

D

A 29-year-old woman with systemic lupus erythema-tosus has been treated with corticosteroid therapy for several years because of recurrent lupus nephritis. She undergoes an emergency appendectomy for acute appendicitis. On postoperative day 2, she becomes somnolent and develops severe nausea and vomiting. She then becomes hypotensive. Blood cultures are negative, and laboratory studies now show Na⁺ of 128 mmol/L, K⁺ of 4.9 mmol/L, Cl⁻ of 89 mmol/L, CO₂ of 19 mmol/L, glucose of 52 mg/dL, and creatinine of 1.3 mg/dL. Which of the following morphologic findings in the adrenal gland cortex is most likely to be present in this patient?

A Adenoma

B Atrophy

C Carcinoma

D Caseating granulomas

E Hemorrhagic necrosis

F Nodular hyperplasia

B

A 44-year-old woman has become increasingly listless and weak and has had chronic diarrhea and a 5-kg weight loss over the past 7 months. She also notices that her skin seems darker, although she rarely goes outside because she is too tired for outdoor activities. On physical examination, she is afebrile, and her blood pressure is 85/50 mm Hg. A chest radiograph shows no abnormal findings. Laboratory findings include serum Na⁺, 120 mmol/L; K⁺, 5.1 mmol/L; glucose, 58 mg/dL; urea nitrogen, 18 mg/dL; and creatinine, 0.8 mg/dL. The serum corticotropin level is 82 pg/mL. Which of the following is most likely to account for these findings?

A Adenohypophyseal adenoma

B Autoimmune destruction of the adrenals

C Pancreatic neuroendocrine tumor

D Metastatic carcinoma with lung primary

E Neisseria meningitidis infection of the adrenals

F Sarcoidosis of the lung and adrenals

B

A 27-year-old man has headaches that have occurred frequently for the past 3 months. On physical examination, he is afebrile, and his blood pressure is 140/85 mm Hg. There are no neurologic abnormalities and no visual defects; however, he has an enlarged thyroid. Laboratory studies show that his serum calcitonin level is elevated. A total thyroidectomy is performed, and on sectioning, the thyroid has multiple tumor nodules in both lobes. Microscopically, the thyroid nodules are composed of nests of neoplastic cells separated by amyloid-rich stroma. The endocrinologist says that the patient's family members could be at risk for development of similar tumors and advises that they undergo genetic screening. Which of the following morphologic findings in the adrenal glands is most likely to be present in this patient?

- A Bilateral 4-cm medullary masses
- B Bilateral cortical atrophy
- C Bilateral cortical nodular hyperplasia
- D Solitary caseating granuloma
- E Solitary 1-cm cortical mass with contralateral cortical atrophy
- F Solitary 12-cm hemorrhagic cortical mass

A

A 26-year-old man developed sudden severe abdominal pain. On physical examination, he had marked abdominal tenderness and guarding. Laboratory studies showed serum glucose, 76 mg/dL; calcium, 12.2 mg/dL; phosphorus, 2.6 mg/dL; creatinine, 1.1 mg/dL; and parathyroid hormone, 62 pg/mL (normal range 9 to 60 pg/mL). During surgery, four enlarged parathyroid glands were found and excised, with re-implantation of one half of one gland. After the surgery, his serum calcium concentration returned to normal. Three years later, he had an episode of upper gastrointestinal hemorrhage. An endoscopy and biopsy specimen showed multiple benign gastric ulcerations. Abdominal MRI indicated multiple 1- to 2-cm mass lesions in the pancreas. He underwent surgery, and multiple tumors were found. Which of the following additional neoplasm lesions is he most likely to have?

- A Adrenal pheochromocytoma
- B Endometrial carcinoma
- C Pituitary adenoma
- D Pulmonary small cell anaplastic carcinoma
- E Thyroid medullary carcinoma

C

A 40-year-old woman has experienced chest pain on exertion for the past 2 months. A month ago, she had pneumonia with Streptococcus pneumoniae cultured from her sputum. On physical examination, she has a body mass index of 35. A random blood glucose value is 132 mg/dL. The next day, a fasting blood glucose is 120 mg/dL, followed by a value of 122 mg/dL on the following day. She is given an oral glucose tolerance test, and her blood glucose is 240 mg/dL 2 hours after receiving the standard 75-g glucose dose. On the basis of these findings, she is prescribed an oral thiazolidinedione (TZD) drug. After 2 months of therapy, her fasting blood glucose is 90 mg/dL. The beneficial effect of TZD in this patient is most likely related to which of the following processes?

- A Activation of PPAR γ nuclear receptor in adipocytes
- B Decreased production of insulin autoantibodies
- C Greater density of insulin receptors in adipocytes
- D Increased half-life of circulating plasma insulin
- E Reduced secretion of glucagon by a cell in islets of Langerhans
- F Regeneration of beta cells in islets of Langerhans

A